

Serial No. 09/287,573

Filed: April 6, 1999

In the Claims:

16. (Amended) A method for [reducing] increasing the signal-to-noise ratio in the characteristic optical response [signature] of a sensor array having subpopulations of sensor elements comprising:

a) measuring the optical response [signature] of at least two of said sensor elements of at least one of said subpopulations upon exposure to a target analyte; [and]

b) summing the optical responses [signatures]; and

c) performing a statistical analysis on said measurements of at least one of said subpopulations.

25. (Amended) A method for amplifying the characteristic optical response [signature] of a sensor array having subpopulations of sensor elements comprising:

a) measuring the optical response [signature] of at least two of said sensor elements of at least one of said subpopulations upon exposure to a target analyte; [and]

b) summing the optical responses [signatures]; and

c) performing a statistical analysis on said measurements of at least one of said subpopulations.

Please add the following new claims:

- 27. A method comprising:

a) providing an array with a plurality of subpopulations of sensor elements;

b) measuring the optical response of each sensor element upon exposure to a target analyte; and

c) performing a statistical analysis on said measurements of at least one of said subpopulations.

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28. The method according to claim 16, 25 or 27, wherein each subpopulation comprises a bioactive agent.

29. The method according to claim 28, wherein at least one of said bioactive agents is a nucleic acid.

30. The method according to claim 28, wherein at least one of said bioactive agents is a protein.

31. The method according to claim 16, 25 or 27, further comprising determining outlying beads and excluding outlying beads from said subpopulation.

32. The method according to claim 16, 25 or 27, wherein said statistical analysis comprises calculating the mean of at least one subpopulation.

33. The method according to claim 16, 25 or 27, wherein said statistical analysis comprises calculating the standard deviation of at least one subpopulation.

34. The method according to claim 16, 25 or 27, further comprising evaluating the statistical validity of said measurements.

35. The method according to claim 16, 25 or 27, further comprising performing a second statistical analysis on said measurements.

36. The method according to claim 35 wherein said second statistical analysis comprises evaluating said measurements using confidence intervals.

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37. The method according claim 35, wherein said second statistical analysis comprises using said measurements to perform hypothesis testing.

*Sub B10
c6* 38. The method according to claim 16, 25 or 27, further comprising comparing said statistical analysis of at least two subpopulations.

39. The method according to claim 38, wherein said statistical analysis comprises performing a cluster analysis of said subpopulation.

40. A method comprising:

*A3
cont.* a) providing an array comprising beads on a substrate comprising a plurality of subpopulations of sensor elements, wherein each sensor element comprises a bioactive agent that will bind a target analyte, and at least two of said subpopulations comprise different bioactive agents that will bind the same target analyte;

*Sub B11
c7* b) measuring the optical response of each sensor element; and
c) performing a statistical analysis on said measurements of at least one of said subpopulations.

41. The method according to claim 40, wherein at least two of said subpopulations each comprise bioactive agents that will bind different target analytes.

42. The method according to claim 41, wherein at least one of said bioactive agents is a nucleic acid.

43. The method according to claim 41, wherein at least one of said bioactive agents is a protein.